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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

WILLIAMS, JEFFERY L

ART UNIT

PAPER NUMBER

2137

MAIL DATE

DELIVERY MODE

04/29/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/056,889	Applicant(s) SWANDER ET AL.	
	Examiner JEFFERY WILLIAMS	Art Unit 2137	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 January 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 – 3, 6 – 8, 10 – 13, 16 – 18, 22, and 23 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 – 3, 6 – 8, 10 – 13, 16 – 18, 22, and 23 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 January 2002 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>1/16/08</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

All objections and rejections not set forth below have been withdrawn.

Claims 1 – 3, 6 – 8, 10 – 13, 16 – 18, 22, and 23 are pending.

Drawings

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the claimed features (e.g. packets having state information for address translator processing, means for adding state information to packets, means for adding separate User Datagram Protocol headers to packets) must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for

consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: Claim 3 comprises the limitation "*wherein the fragmenter module does not split the IKE data packets unless no response to a previously-sent IKE data packet has been received*". The Applicant has not pointed out where the amended claim is supported, nor does there appear to be a written description of the claim limitation in the application as filed.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the

Art Unit: 2137

1 art to which it pertains, or with which it is most nearly connected, to make and use the same and shall
2 set forth the best mode contemplated by the inventor of carrying out his invention.
3

4 **Claim 3 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply**
5 **with the written description requirement. The claim contains subject matter**
6 **which was not described in the specification in such a way as to reasonably**
7 **convey to one skilled in the relevant art that the inventor(s), at the time the**
8 **application was filed, had possession of the claimed invention. See above**
9 objection to the specification.

10
11 The following is a quotation of the second paragraph of 35 U.S.C. 112:

12 The specification shall conclude with one or more claims particularly pointing out and distinctly
13 claiming the subject matter which the applicant regards as his invention.
14

15 **Claims 1, 2, and 18 are rejected under 35 U.S.C. 112, second paragraph, as**
16 **being indefinite for failing to particularly point out and distinctly claim the subject**
17 **matter which applicant regards as the invention.**

18 Specifically the recitation "in response to receiving ... determining that IKE
19 fragmentation is capable" is nonsensical. The examiner notes that no presumption is
20 made by the examiner nor by the applicant for "IKE fragmentation" itself to be capable
21 (i.e. possess the ability) of anything. For the purpose of examination, the examiner
22 presumes the applicant to recite "determining the IKE fragmentation capabilities of a
23 receiving node by reference to the vendor identification value" as is found disclosed
24 within the applicant's specification, pg. 20, lines 14-20.

25

26

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 3,6-8,10-13, 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Thread Topic (TT), “RE: CERT_REQ_PAYLOAD usage”, in view of Jinmei, “How to write UDP/Ipv6 applications that care about path MTU”, in view of Kent et al. (Kent), “Fragmentation Considered Harmful”.

Regarding claim 3, TT discloses the *generating and transmitting an IKE packet over a network* (TT, pg. 1, par. 1-3). TT discloses that the problems with unintentional fragmentation occur when IKE payloads are encapsulated within singular, large UDP packets, which can be subsequently fragmented (TT, pg. 1-2, par. 7). TT teaches to avoid fragmented IKE payloads and suggests for IKE applications to incorporate path discovery so as to reduce the size of IKE payloads that will be encapsulated within UDP packets (TT, pg. 4, par. 1-4; pg. 7).

TT does not appear to explicitly state that, an IKE application, as a result of discovering the MTU, should fragment a packet into a plurality of packets, i.e. *fragmenting the IKE packet into a plurality of smaller packets and transmitting each of the plurality of smaller packets over a network.*

1 However, Jinmei teaches that an application, such as IKE, can discover the path
2 MTU and subsequently avoid fragmentation by dividing a single packet into a plurality of
3 smaller packets (pg. 2, 3). It would have been obvious to one of ordinary skill in the art
4 to recognize teachings of Jinmei along with the teachings of TT. This would have been
5 obvious because one of ordinary skill in the art would have been motivated to
6 implement a mechanism so as to avoid unintentional fragmentation.

7 The combination enables fragmenting IKE packets according to an appropriate
8 before creating or encapsulating the packets as IKE payloads within UDP. However,
9 IPSEC does not appear to specifically state known methods of packet fragmentation,
10 such as conditions requiring fragmentation and that a packet fragment should have a
11 proper packet header.

12 Kent et al. discloses principles for packet fragmentation. While Kent discusses
13 these principals of packet fragmentation often in the context of the IP layer (Kent, pg.
14 75, par. 4), Kent further discloses that these fragmentation methods are to be applied in
15 higher protocol layers as well. Upper level protocol layers should be cognizant of
16 fragmentation issues, and should fragment or send smaller packet sizes if it is known
17 that a larger packet size will be fragmented at the IP layer (Kent et al., section 3, par. 4).
18 For example, Kent discloses that an upper layer (i.e. TCP) should not send a large un-
19 fragmented segment when it a lower layer (i.e. IP) will have to fragment it (Kent, pg. 79,
20 pars. 3, 4). Kent discloses that the packet fragmentation method consists of
21 fragmenting a larger packet into a plurality of fragments. Each fragment is sent as a
22 separate packet, with each of the plurality of smaller packets containing a properly

1 formatted header according to the protocol (Kent et al., section 2.1). It would have been
2 obvious to one of ordinary skill in the art to employ the principles for packet
3 fragmentation disclosed by Kent with the teachings of the combination of TT and Jinmei
4 requiring the fragmentation of IKE packets. This would have been obvious because one
5 of ordinary skill in the art would have been motivated to practically implement packet
6 fragmentation methods for the purpose of fragmenting IKE packets so as to avoid
7 creating large UDP packets as taught by the combination of TT and Jinmei.

8 Therefore, the combination enables:

9 *a User Datagram Protocol (UDP) stack that is capable of generating UDP data*
10 *packets for transmission over a network* (TT, pg. 1-2, par. 7; pg. 4, par. 1-6).

11 *an IKE protocol stack that generates IKE data packets that are subsequently*
12 *processed by the UDP protocol stack* (TT, pg. 7; pg. 1-2, par. 7; Jinmei, pg. 2);

13 *and a fragmenter module that intercepts IKE data packets prior to being*
14 *processed by to the UDP protocol stack and splits the IKE data packets into a plurality*
15 *of smaller data packets that may be subsequently formatted by the UDP protocol stack*
16 (TT, pg. 7; Jinmei, pg. 2). The combination enables fragmenting IKE packets (thus a
17 fragmenter module) prior to being processed by the UDP stack.

18 *wherein the fragmenter module does not split the IKE data packets unless no*
19 *response to a previously-sent IKE data packet has been received* (Kent et al., section
20 3.3, pars. 1 – 3). Herein, the combination enables that once a suitable response is
21 received, the fragmenter module does not continue to split the data packets.

1 *and wherein, each of the plurality of smaller data packets includes a header*
2 *formatted according to the IKE protocol and state information for network address*
3 *translator processing (Kent, sect. 2.1, par. 1—herein the prior art discloses that each*
4 *fragment is sent as a separate packet, with each of the plurality of smaller packets*
5 *containing a properly formatted header according to the protocol).*

6
7 Regarding claim 6, it is rejected, at least for the same reasons as claim 3, and
8 furthermore because the combination enables:

9 *sending a vendor identification value, the vendor identification value indicating*
10 *IKE fragmentation capability (TT, pg. 7 – the prior art discloses using the IKE protocol,*
11 *thus the sending of a vendor identification value as established by the protocol),*
12 *receiving a plurality of fragments of an IKE data packet from a transmitting node,*
13 *wherein each fragment includes an identifier that associates each fragment with an IKE*
14 *data packet ; and discarding all fragments that contain a first identifier if a*
15 *predetermined number of fragments are received that contain a second identifier (Kent*
16 *et al., section 2.4, par. 3);*

17 and determining the total size of all fragments that contain the same identifier
18 and discarding said fragments when the total size exceeds a predetermined limit (Kent
19 et al., section 2.4, par. 2, 3). Herein, the combination discloses that a fragment
20 reassembly process may not progress if the total size of a datagram (comprising
21 fragments with a same identifier) exceeds a predetermined limit. As an example, a
22 sufficiently sized space for reassembling a large datagram could comprise a size of 8

1 buffer spaces. Thus, when that predetermined limit is achieved, the occupying
2 fragments of an unassembled datagram will expire and be discarded.

3
4 Regarding claim 7, the combination of enables:
5 *wherein the step of discarding all fragments that contain a first identifier is*
6 *performed when at least one fragment is received that contains a second identifier (Kent*
7 *et al., section 2.4, par. 3).*

8
9 Regarding claim 8, the combination enables:
10 *determining whether all fragments that are associated with an IKE data packet*
11 *have been received, and sending a no acknowledgment (NAK) message to the*
12 *transmitting node when at least one fragment has not been received (Kent et al., section*
13 *3.3.3). A receiving host is disclosed as making a determination as to whether all*
14 *fragments associated with an IKE packet has been received. The receiving host will*
15 *convey a "Time exceeded" message ("NAK") to the transmitting host when at least one*
16 *fragment has not arrived, indicating to the transmitting host that it has not received all*
17 *the fragments.*

18
19 Regarding claim 10, the combination does not appear to explicitly state *wherein*
20 *the predetermined limit is 64 kilobytes.* This, however, would have been obvious to one
21 of ordinary skill in the art to set a predetermined limit of 64 kilobytes as the total size of
22 all possible fragments. As evidenced by the "Glossary for the Linux FreeS/WAN

1 project” – (definition for DoS), this would have been obvious to one of ordinary skill in
2 the art because the standardized size limit of an IP packet is 64 kilobytes, and a failure
3 to discard illegitimate packets when the size exceeds the standard limit would result in
4 denial of service attacks.

5
6 Regarding claim 11, it is rejected, at least, for the same reasons provided for the
7 rejection of claim 3, and furthermore because the combination discloses that to avoid
8 unnecessary fragmentation of packets (Kent, section 3.2), the system should be
9 cognizant of network timing issues. Thus, a system will not assume it is necessary to
10 retransmit a packet until a determined period of time (“round-trip time” or the estimated
11 time period between a sender’s packet transmission and a sender’s reception of a
12 packet acknowledgement response)(Kent, section 3.2.1).

13 While the combination does not nominally recite “a timer”, it would have been
14 obvious to one of ordinary skill in the art to employ appropriate timing means (“a timer”)
15 for determining when packet retransmission is necessary. This would have been
16 obvious because one of ordinary skill in art would have been motivated by the
17 combination’s teachings for measuring and determining timing delays before
18 retransmitting previously transmitted packets within a system.

19 Additionally, the combination discloses the encapsulation of IKE packet
20 fragments and their transmission through underlying protocols such as UDP. Therefore,
21 the combination enables for IKE and UDP headers for the transmitted packets.

1 Regarding claim 12, the combination enables:

2 *further comprising means for determining the capability of the receiver node for*
3 *receiving fragmented packets* (Kent et al., section 3.3, par. 2).

4
5 Regarding claims 13, it is rejected, at least, for the same reasons as claim 3 and
6 11.

7
8 Regarding claim 16, the combination enables:

9 *wherein the plurality of smaller packets contain the same information as that*
10 *contained within the original IKE packet* (Kent et al., section 2.4, par. 3, section 2.1).

11
12 Regarding claim 20, it is rejected, at least, for the same reasons as claims 1 and
13 11, and further because the combination enables:

14 *fragmenting the packet into a plurality of fragments using a code module that*
15 *does not implement the TCP, UDP or IP protocols before the packet is processed by a*
16 *code module that does implement the TCP, UDP or IP protocols* (Jinmei, pg. 2; TT, pg.
17 7; Kent et al., section 3). The combination enables fragmentation which is application
18 based and therefore inherently performed by some type of module for instructing a
19 computer ("code module").

20 *comprising including an identifier that identifies the data packet in each packet*
21 *fragment* (see rejection of claim 2); *and transmitting the packet fragments over a*
22 *network* (see rejection of claim 1).

1
2 **Claims 22 – 23 are rejected under 35 U.S.C. 103(a) as being unpatentable**
3 **over the combination of TT, Jinmei, and Kent in view of Cerf et al. (Cerf), “A**
4 **Protocol for Packet Network Intercommunication”.**

5
6 Regarding claim 22, it is rejected, at least, for the same reasons as claims 3 and
7 6, and furthermore because the combination enables:

8 *receiving a plurality of fragments of a single IKE data packet, wherein the*
9 *fragments were transmitted from a transmitting node in an order that can be determined*
10 *from information contained within the received data fragments (Kent et al.; section 2.1,*
11 *par. 3; section 2.4, par. 3). The combination does not disclose that a receiver may*
12 *detect duplicate packets from a single IKE packet and then discard such duplicates.*

13 Cerf discloses that a receiver which receives duplicate packets will discard such
14 duplicates. Additionally, Cerf discloses that a receiver may detect out of order packets,
15 and choose to store and acknowledge such packets or discard such packets (Cerf, pg.
16 7-8, “Retransmission and Duplicate Detection”). It would have been obvious to one of
17 ordinary skill in the art to detect and discard duplicate packets. This would have been
18 obvious because one of ordinary skill in the art would have been motivated to avoid
19 resource consummation by superfluous data.

20

Regarding claim 23, the combination discloses *sending a message to the transmitting node that out of order packets have been received* (Cerf, pg. 7-8, “Retransmission and Duplicate Detection”).

Response to Arguments

Applicant's arguments filed 1/23/08 have been fully considered but they are not persuasive.

Applicant argues essentially that:

(i) The recitation “wherein the fragmenter module *does not split* the IKE data packets *unless no response* to a previously-sent IKE data packet *has been received*” is supported by the original disclosure. (Remarks, pg. 9)

Specifically, applicant asserts that the recitation “wherein the fragmenter module *does not split* the IKE data packets *unless no response* to a previously-sent IKE data packet *has been received*” is supported by the original disclosure. However, the examiner points out that the applicant has not shown support for the recitation of not splitting IKE packets unless no response is received, nor does there appear to be a written description of the claim limitation in the application as filed. Specifically, while the applicant points to support for the concept of not fragmenting when packets are

1 successfully transmitted, the examiner notes that the applicant fails to show the concept
2 of never fragmenting unless there is no response received.

3
4 (ii) Prior art does not teach the inclusion of state information within the transmitted
5 IKE packets, such as may be found recited within claim 3. (Remarks, pg. 11).

6
7 In response, the examiner respectfully notes that the prior art enables for packets
8 to comprise state information that permits processing by network elements such as
9 NATs (Kent, sect. 2.1)

10
11 (iii) Prior art does not teach "sending a vendor identification value, the vendor
12 identification value indicating IKE fragmentation capability", such as may be found
13 recited within claim 6. (Remarks, pg. 11)

14
15 In response, the examiner respectfully notes that the prior art discloses
16 communication according to the IKE protocol. As transmitting packets comprising
17 vendor identification values are characteristic of the IKE protocol, the examiner notes
18 that the prior art enables for sending of a vendor identification value". Furthermore, it is
19 noted regarding the recitation of the intended use of a transmitted vendor identification
20 (e.g. indicating IKE fragmentation capability) that the claim's characterization of a
21 vendor identification value does not result in novelty over the prior art's vendor
22 identification value.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

See Notice of References Cited

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeffery Williams whose telephone number is (571) 272-7965. The examiner can normally be reached on 8:30-5:00.

Art Unit: 2137

1 If attempts to reach the examiner by telephone are unsuccessful, the examiner's
2 supervisor, Emmanuel Moise can be reached on (571) 272-3865. The fax phone
3 number for the organization where this application or proceeding is assigned is (703)
4 872-9306.

5 Information regarding the status of an application may be obtained from the
6 Patent Application Information Retrieval (PAIR) system. Status information for
7 published applications may be obtained from either Private PAIR or Public PAIR.
8 Status information for unpublished applications is available through Private PAIR only.
9 For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should
10 you have questions on access to the Private PAIR system, contact the Electronic
11 Business Center (EBC) at 866-217-9197 (toll-free).

12
13
14 J. Williams
15 AU 2137
16
17 /Emmanuel L. Moise/
18 Supervisory Patent Examiner, Art Unit 2137
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